

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended): ~~The use of~~ A method of lubricating a steel sheet, the method comprising

providing a steel sheet coated with a layer consisting of a metal coating based on zinc or a zinc alloy;

treating the coated steel sheet with an aqueous treatment solution containing sulfate ions SO_4^{2-} with in a concentration of not less than 0.01 mol/l in order to treat the surface of a steel sheet treated on at least one of its sides with a to obtain on the metal coating an upper layer based on zinc or its alloys, for the purpose of reducing the formation of metal powder or particles based on zinc or its alloys generated by the degradation of the coating while said sheet is being formed zinc hydroxysulfate and zinc sulfate; and

applying on the upper layer based on zinc hydroxysulfate and zinc sulfate a lubricating oil film with a weight of between 0.2 and 0.5 g/m².

Claim 2 (Currently Amended): The use method as claimed in claim 1, ~~in which~~ wherein the aqueous treatment solution ~~furthermore~~ further contains Zn^{2+} ions ~~with in~~ with in a concentration of not less than 0.01 mol/l.

Claim 3 (Currently Amended): The ~~use~~ method as claimed in ~~either~~ any one of claims 1 and 2, ~~in which the conditions under which the treatment solution is applied to the surface of the sheet, namely the temperature, the time during which the solution is in contact with the galvanized surface, the SO_4^{2-} ion concentration and the Zn^{2+} ion concentration, are adjusted so as to form a layer based on zinc hydroxysulfate and zinc sulfate, the~~ wherein a sulfur content of which the upper layer is not less than 0.5 mg/m^2 .

Claim 4 (Currently Amended): The ~~use~~ method as claimed in ~~any one of claims 1 to 3~~ claim 2, in which wherein the Zn^{2+} ion concentration and the SO_4^{2-} ion concentration in the aqueous treatment solution are between 0.07 and 0.55 mol/l.

Claim 5 (Currently Amended): The ~~use~~ method as claimed in any one of claims 1 ~~[[to 4]]~~ and 2, in which wherein the pH of the aqueous treatment solution is between 5 and 7.

Claim 6 (Currently Amended): The ~~use~~ method as claimed in any one of claims 1 ~~[[to 5]]~~ and 2, in which the conditions under which the treatment solution is applied, namely the temperature, the time during which the solution is in contact with the galvanized surface and the SO_4^{2-} ion and Zn^{2+} ion concentrations, are adjusted so as to form a hydroxysulfate/sulfate-based layer having wherein a sulfur content of the upper layer is between 3.7 and 27 mg/m^2 .

Claim 7 (Currently Amended): The use method as claimed in any one of claims 1 [[to 6]] and 2, in which further comprising, after the coated steel sheet has been treated with the aqueous treatment solution has been applied to the sheet, said sheet is dried drying the sheet, after having optionally been rinsed optionally rinsing the sheet in order to remove the a soluble portion of the hydroxysulfate/sulfate upper layer.

Claim 8 (Currently Amended): The use method as claimed in claim 1, ~~in which~~ wherein the coated steel sheet is treated with the aqueous treatment solution is applied under anodic polarization and the pH of the aqueous treatment solution is equal to 12 or higher, but less than 13.

Claim 9 (Currently Amended): The use method as claimed in claim 8, ~~in which the~~ further comprising, during the treating, adjusting a density of electrical charges flowing during the treatment through the a surface of the sheet is adjusted in order to form a zinc hydroxysulfate/zinc sulfate-based the upper layer, the sulfur content of which is 0.5 mg/m² or higher.

Claim 10 (Currently Amended): The use method as claimed in ~~either any one of~~ claims 8 and 9, ~~in which~~ wherein the SO₄²⁻ ion concentration in the aqueous treatment solution is greater than 0.07 mol/l.

Claim 11 (Currently Amended): The use method as claimed in ~~any one of claims 8 to~~ claim 9, in which the electrical charge density is adjusted in order to form a zinc hydroxysulfate/zinc sulfate-based layer, wherein the amount of sulfur of which in the upper layer is between 3.7 and 27 mg/m².

Claim 12 (Currently Amended): The use method as claimed in ~~any one of claims~~
~~claim 8 to 11, in which~~ wherein the polarization current density ~~applied~~ during the ~~treatment~~
treating is greater than 20 A/dm².

Claim 13 (Currently Amended): The use method as claimed in ~~any one of claims~~
~~claim 8 to 12, in which~~ wherein, after treating the coated steel sheet with the aqueous
treatment solution ~~has been applied to the sheet, said~~ the sheet is rinsed.

Claims 14-17 (Canceled)